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red means new sentences have been added!

Survey of treatment polices under conscious sedation at centres dealing with people with high levels of dental anxiety across the United Kingdom.

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In brief

- The article highlights the range of dental care with conscious sedation offered to people with dental ~~anxiety/~~phobia.

- Dentists who provide conscious sedation services for this group provide mainly simple dental treatment.

- Participants mentioned lack of funding and restriction for provision of complex care (such as molar endodontics and implants) with conscious sedation.

Abstract

Introduction:

Individuals with dental ~~anxiety~~ phobia have poorer oral health. This study sought to evaluate the extent to which service level restrictions are perceived to exist in the provision of dental treatment, through a survey of the frequency of dental treatments believed to be offered for patients with dental phobia by the dentists who provide sedation and dental care services.

Methods:

Questionnaire survey of 70 dental practitioners working within services providing treatment under sedation for individuals with dental ~~anxiety~~ phobia.

Results:

The majority of dental care for dentally ~~anxious~~ phobic patients were simple restorations (amalgam and tooth coloured filling) (64, 91%), scaling (50, 71%) and extractions (65, 94%). More complex dental treatments (such as molar endodontic, crowns and bridges and implant replacement of missing teeth) was either never provided or were referred to a specialist clinic. Participants perceived limitations (for example restrictions to type of treatment episodes and availability/commissioning of services in particular for patients with diagnosis of dental anxiety and phobia alone) for provision of dental care under intravenous sedation.

Conclusion:

Most dentists routinely provided simple restorative and periodontal treatment indicating that gingivitis and periodontal disease is present in this group. The increased rates of extractions in comparison to complex dental treatments (such as root canal therapy, implant, crowns and bridges) might indicates advanced disease (therefore basic treatment), patients' and dentists' treatment preference, or service limitations as a result of specific commissioning restrictions. Few participants mentioned dentists' factors (lack of ability, competence or skill) as barriers for provision of complex care.

~~Ethical approval was gained from King's College London, the Biomedical Sciences, Dentistry, Medicine and Natural & Mathematical Sciences Research Ethics committee (LRS-14/15-1252).~~

Introduction:

Greater dental anxiety is associated with more decayed, [1-3] missing [1, 4-6] and fewer filled teeth. People with dental anxiety also tend to attend irregularly and mostly when they suffer from dental pain. Lower levels of received treatment may contribute to their perceived poorer quality of life.[1] The untreated and advanced disease also might lend itself to provision of more basic care including extractions. Other reasons for missing teeth in this group can be their preference for extraction [5-6] or care options that are offered by dentists to them. The proposed care options might reflect these individuals' inability to cooperate with dental treatment as many can only accept dental care with conscious sedation (CS). In the UK, there are currently different management techniques (non-pharmacological, pharmacological and a combination) to address people with dental phobia's oral health needs. The pharmacological treatment options can be provision of CS either inhalation sedation (relative analgesia) or intravenous sedation. Care planning options might differ for CS as treatment provisions under these circumstances can be demanding '*due to the diverse range of patients' needs and requirements related to levels of anxiety, the patient's ability to cope with treatment, co-morbidities and the proposed dental care*'. [7] According to Wanyonyi *et al*. (2016) [8] the majority of treatment courses (>88%) with CS in primary care between 2012 and 2014 was in band 2 where crowns, bridges and dentures are not included reflecting simple care provision.

To date no published research in the UK discusses barriers such as funding and commissioning issues on the care provision for this group in a secondary setting at the time of conducting this study. ~~The study aimed to investigate the frequency of dental treatments that was believed to be offered for anxious and phobic patients by the dentists who provide sedation and dental care services. An evaluation of healthcare ('conscious sedation treatment') policies on practises of dentists and the offered dental care for dentally anxious and phobic patients in their care setting was proposed.~~ This study sought to evaluate the extent to which service level restrictions are perceived to exist in the provision of dental treatment, through a survey of the frequency of dental treatments believed to be offered for patients with dental phobia by the dentists who provide sedation and dental care services.

Methods:

~~A list of all practices, Community Dental Services (CDS) and teaching hospitals, which might provide dental treatment under sedation in the United Kingdom, was collated. This information is available for the public to view on internet. This information was compared to the British Dental Association database and any missing information was added to the current list. All identified groups, the members of the UK dental sedation teaching group (DSTG), people in the centres who either provide care under CS or head a service/clinical directors/ head(s) of department(s)/a General Dental practitioner (GDP) that provides sedation for dental treatment for anxious patients were invited to participate.~~ A list of all general dental practices, Community Dental Services (CDS) and teaching hospitals, which might provide dental treatment under sedation in the United Kingdom, was collated using the search terms *'dental anxiety', 'dental phobia', 'conscious sedation', 'dental sedation', 'Community Dental Services', 'UK dental sedation teaching group (DSTG)', 'dental teaching hospitals', 'General Dental practitioner (GDP)' and 'dental practices that provide sedation'*. This information is available for the public to view on internet. The researcher contacted the British Dental Association (BDA) library manger to receive an updated list of providers of CDS in the UK to ensure that her list was complete.

Each identified internet site was visited a) to find if the service(s) do provide sedation and b) to identify the named people (e.g. a General Dental practitioner [GDP], head a service/clinical directors/ head(s) of department[s]) in those centres who provide dental care under CS for people with dental phobia. All service providers that mentioned delivery of dental treatment with sedation for phobic patients were invited to participate. The only exclusion criteria were being staff of the authors' own NHS Foundation Trust as 4 staff members piloted the questionnaire which didn't require any amendments.

Ethics approval was gained from King's College London, the Biomedical Sciences, Dentistry, Medicine and Natural & Mathematical Sciences Research Ethics committee (LRS-14/15-1252). The questionnaire (appendix 1) was coded to ensure confidentiality and anonymity and was sent to the identified people in those services who provide care with sedation. Stamped addressed envelopes for return was also included. A return of a completed questionnaire was considered as agreement to participate. A reminder was sent to all the identified individuals after 3 weeks from the initial mailed questionnaire.

The questionnaire had the following main questions:

- Demographic data: e.g. current post/title
- Aware of any sedation policies in your workplace
- The routine care that the participant would provide for dentally anxious patients under conscious sedation

The data analysis was primarily descriptive. The frequency and distribution of the participants' responses was determined.

Results:

The response rate in the first wave was 21% (48 out of 224) in the end of August 2015. It increased to 99 by mid-December 2015 (44%). The total number of questionnaires that were eligible was 70 (31%) (Figure 1). The 7 excluded questionnaires quoted conscious sedation contract restriction for adult population particularly with dental ~~anxiety~~ phobia.

Figure 1 goes here!

Demographic data

The majority of the respondents were female (46, 66%) and were on a specialist list (44, 63%). Participants who were registered on the specialist list were commonly (32, 73%) on a special care dentistry (SCD) list (Table 1). Generally, the sample had completed their first dental degree between periods of 1985 to 1989 (18, 26%). The main occupation of participants was senior dental officer (26, 38 %) in CDS (Table 2).

Table 1 and 2 goes here!

Treatment data

Participants were asked to tick the level of restorative dental care, they were offering ~~anxious and~~ phobic patients. Generally, simple scaling was routinely (50, 71 %) provided as was two visit periodontal treatment (32, 46%). Majority (64, 91%) of routinely restorative care were amalgam restorations and tooth coloured restorations (Table 3).

More complex care such as root filling of a molar tooth was seldom (28, 40%) or never (26, 37%) provided (Table 3). Few practitioners referred molar endodontics cases to a specialist clinic (4, 6%). ~~Occasionally, root canal treatment of incisors, canine (26, 38%) and premolar teeth (25, 36%) was provided.~~

Advanced restorative care was in majority of cases never provided. Crowns such as porcelain (22, 31%), indirect (18, 22%) and direct (15, 22%) gold crowns were occasionally provided, with bonded (acid and etch) bridges (32, 46%) and lab composite faced bridges (49, 70%) were never provided.

Table 3 goes here!

Majority of participants (27, 40%) responded that implants were never placed. ~~If an implant therapy was required many (35, 51%) would refer the patient to a specialist clinic.~~ Of the responders (33, 47%) who commented, implants were placed for gagging patients (12, 37%), special care patients (9, 27%), medically compromised (5, 15%) and phobic (5, 15%) patients. Almost all participants did routinely (65, 94%) extract single or multiple teeth (60, 86%) under sedation.

Perceived barriers

Seven questionnaires were excluded as their services did not commission sedation services for people with dental ~~anxiety and~~ phobia. Most services had a sedation policy for people with dental Phobia (41, 62%). Only, 4 (10 %) of participants sent their sedation policy. Most (48, 86%) participants, who answered the question about commissioning, mentioned that they perceived barriers 'restrictions' for services provision (Table 4). The contractual restrictions that were mentioned could be categorised to

limited available services for people with dental ~~anxiety and~~ phobia and/or limited treatment options because of lack of funding.

Table 4 goes here!

Thirty five out of 62 (56%) people were aware of other local services that would provide sedation for dentally ~~anxious~~ phobic patients.

Discussion:

This study reports the findings of a postal survey of practitioners who work in a setting where conscious sedation is provided for dentally ~~anxious and~~ phobic patients. The majority of respondents' treatment planned for simple periodontal and restorative care citing restrictions placed by commissioners as the main reason for this. Although an evaluation of the content of healthcare ('conscious sedation treatment') policies was not performed as limited policies were received from the respondents, we found that participants perceived barriers for service and provision of complex dental treatment.

The response rate was low; however, this is not unusual for this type of survey. [9] Another introduced bias was introduction of a convenience sample to answer our research question. There will be a response bias and limitations when opinions and self reported therapeutic preferences and adherence to guidelines are sought from practitioners using a questionnaire in a cross sectional survey, [10] because participants may blame on structural barriers rather than their perceived skills. They can also over estimated adherence to guidelines. [10] Other common errors in using survey questionnaire are non-response or incorrect answers, therefore mentioning the errors and outline methodology and research process for the readers are important. [11] The ease of using questionnaires and the lack of objective measures for opinions and self reported practices of health care professional make this type of research method a common approach as seen in the literature. [10-13]

Decisions about treatment are complex [14] and in order to try to ~~simply~~ simplify this process, we looked at two main factors: patients and dentists' characteristics in this study's analysis. In our study, most dentists routinely provided simple periodontal treatment indicating that gingivitis and periodontal disease is present in this group. Simple restorative care (64, 91%) and extractions (65, 94%) were also commonly provided. People with dental phobia have more missing teeth [15] and this can be partly explained as a result of presentation of advanced disease once the patient finally attends as they are more likely to avoid dental treatment [16] therefore extractions could simply be a reflection of advanced disease (periodontal or caries) once they finally attend. This statement is in agreement with studies where people with anxiety had fewer filled teeth that indicate less restorative care. [5, 17]However in contrast, a few studies have showed higher number of filled teeth in anxious groups. [4, 6] One possible explanation of this may be that once people with dental phobia attend, their treatment preferences and choice might depend on their degree of dental pain that they are experiencing [18] and the pain may mask their decision making.

Another possible reason may be that the dentists' suggested treatment options and care planning based on their previous experiences and challenges to provide dental care for people with dental phobia. Treatment provision can be difficult, costly and time consuming because of patients' level of cooperation with the proposed dental treatment which can be complex as a result of their poor oral health. We are aware that the treatment type can have an impact on patients' degree of fear. In a study, 12.7% of participants reported high fear when endodontic treatment was offered if they were to attend in pain. [18]

The UK Department of Health (DoH, 2007) [19] and the Society for Advancement of Anaesthesia in Dentistry (SAAD, 2013)[7] have provided service objectives for NHS Anxiety Management and Sedation Services that aids for ensuring the best possible patient outcome. However, barriers such as inconsistency of CS service commissioning ~~that in turn can lead to limited access to CS services according to each service' local patient's needs~~ and availability of dentists with the required additional skills ~~for using all conscious sedation techniques~~ might compromise provision of high quality care. Inconsistency of CS service commissioning for people with dental phobia can lead to limited access and difficulty to address these patient's needs. Although, SAAD (2013)[7] have included

'Patients that are anxious or phobic' eligible for referral to 'highly specialised CS', this study highlighted that this might not be the case for some service providers.

Indeed, this was highlighted in Wanyonyi *et al.* (2016) [8] study where deprived areas had the highest volume of patients requiring conscious sedation in primary care setting and there were geographical inequalities in service provision. Some patients (11%) required more than one course of treatment [8] and the dental care can be considered as complex. The high and complex dental need require additional visits and time in a dental surgery. In one study, patients referred to Public Dental Services (PDS) had 'intermediate' and 'complex' treatment needs according to the Index of Sedation Need (IOSN) and over 80% were regarded as extremely dentally anxious.[20] The level of patients' anxiety can be one of the reason why patients who have dental treatment under CS, frequently ask for sedation to manage their anxiety rather than behavioural management techniques.[21] Patient involvement in planning of their care and exercising a choice is important.[22]

Other barriers, besides shortage of resources such as lack of remuneration in provision of complex dental treatments (such as molar root canal therapy, implant), can be dentists' factors (lack of ability, competence or skill) which was mentioned by few participants. Appropriate available specific training, support (time and financial) to attend courses for provision of complex care with CS with support for a mentor on site if necessary and availability of 'expert' opinions when needed might address some of the mentioned barriers. This area is of an interest and is worthy of an in-depth research.

Conclusion:

This research highlighted the type of barriers (e.g. contractual constrictions or the providing dentists' skill mix and competency) for provision of certain aspects of care for people with dental ~~anxiety and~~ phobia under CS which may put pressure on the restricted ~~exciting~~ existing specialised services. Current healthcare policies/funding may limit options for dental treatment, as complex care is costly. Dentists working within such restrictions might lose their confidence over time. This research suggests that a perceived barrier to the provision of complex restorative care to individuals with dental phobia is restrictions placed on the scope of procedures offered. This may potentially explain the poorer oral health and oral health related quality of life of people with dental phobia. [1,23] Further research could explore whether novel minimally invasive techniques might offer an alternative method for providing comprehensive dental care to individuals with dental phobia, and the potential personal and economic benefits of such an approach compared to the current situation.

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Figure 1: Breakdown of the respondents.

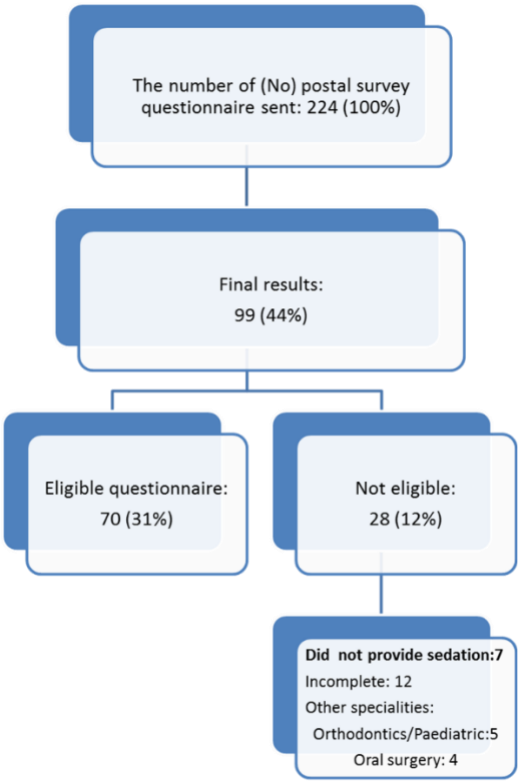

Table 1: Demographic characteristics of participants.

Categories (total answers)	Variable	Number (%)
Age group (70)	20-29	2 (3)
	30-39	15 (21)
	40-49	20 (28)
	50-59	29 (41)
	60 +	4 (6)
Of the people who said that they were on a specialist list (44)	SCD only	29 (66)
	SCD and other	3 (7)
	Restorative	3 (7)

Categories (total answers)	Variable	Number (%)
	Dental public health/ Prosthodontics /oral surgery	3 (7)
	Paediatric	2 (4)
	Not specified	4 (9)
Qualify with your first dental degree? (70)	Before 1980	5 (7)
	1980-1984	11 (16)
	1985-1989	18 (26)
	1990-1994	11 (16)
	1995-1999	10 (14)
	2000-2004	9 (13)
	2005-2009	5 (7)
	2012	1 (1)

Table 2: The occupation of participants. (A new table)

Categories (total answers)	Variable	Number (%)
What is your main current job title? (69)	**Occupation**	
	* GDP	5 (7)
	Dental Officer	7 (10)
	Senior dental officer	26 (38)
	Armed forces	0
	Hospital consultant	9 (13)
	Hospital speciality dentists	6 (9)
	Academic lecturer	0
	Senior lecturer	3 (4)
	Postgraduate student	0
	Head of service/clinical director/clinical lead	8 (12)
	Associate specialist	0
	Specialist in SCD	1 (1)
	Senior clinical teaching fellow	1 (1)
	Lead dentist	2 (3)
	Chair	1 (1)
	Total	69 (99%)

Categories (total answers)	Variable	Number (%)
In which department do you see your patients?	Hospital: Sedation	9 (47)
	Hospital: Restorative	3 (16)
	Hospital: Special Care Dentistry	4 (21)

1. Hospital (19 + 13= 32) 2. Community (20 + 27=47) In total 79 answers (as multiple answers were indicated) * Please note that this question did not apply for GDP participants	Hospital: Sedation & Special Care Dentistry	3 (16)
	Total: hospital	19 (100)
	Hospital: Other	Sedation 2 (15) Restorative 4 (31) Special Care Dentistry 3 (23) Sedation & Special Care Dentistry 1 (8) Other not specified: 3 (23) **Total:** 13 (100)
	Total: Community Dept. Special Care Dentistry	20 (100)
	Community: Other	Specified Special care: 21 (77) Not specified Other: 6 (22) **Total:** 27 (100)

Table 3: Outlines the frequency of provided treatments.

The name of the procedure (No./% of people who answered the question)	Routinely (%)	Occasionally (%)	Seldom (%)	Never (%)	Refer to a specialist clinic (%)
Periodontal					
Simple scaling (70, 100%)	50 (71)	15 (21)	3 (4)	2 (3)	0 (0)
2 visit periodontal treatment (70, 100%)	32 (46)	25 (36)	9 (13)	4 (6)	0 (0)
Chronic periodontal treatment (70, 100%)	16 (23)	19 (27)	16 (23)	16 (23)	3 (4)
Gingivectomy (68, 97%)	2 (3)	5 (7)	11 (16)	22 (32)	28 (41)
Crown lengthening (68, 97%)	1 (1)	4 (6)	7 (10)	27 (40)	29 (43)
Restorative care					
Amalgam (70, 100%)	64 (91)	4 (6)	1 (1)	1 (1)	0 (0)
Tooth coloured filling (70, 100%)	64 (91)	5 (8)	0 (0)	1 (1)	0 (0)
Fissure sealant (PPR) (70, 100%)	46 (66)	14 (20)	8 (11)	2 (3)	0 (0)
Root fillings					
Incisor/ canine (69, 99%)	31 (45)	26 (38)	7 (10)	4 (6)	1 (1)
Upper/lower premolar (70, 100%)	18 (26)	25 (36)	15 (21)	11 (16)	1 (1)
Molar (70, 100%)	5 (7)	7 (10)	28 (40)	26 (37)	4 (6)

The name of the procedure (No./% of people who answered the question)	Routinely (%)	Occasionally (%)	Seldom (%)	Never (%)	Refer to a specialist clinic (%)
Apicectomy (70, 100%)	1 (1)	10 (14)	6 (9)	28 (40)	25 (36)
Crowns and bridges					
Porcelain (70, 100%)	5 (7)	22 (31)	15 (21)	23 (33)	5 (7)
Inlay (69, 99%)	1 (1)	7 (10)	12 (17)	44 (64)	5 (7)
Gold inlay (69, 99%)	1 (1)	6 (9)	12 (17)	45 (65)	5 (7)
Indirect gold crowns (69, 99%)	1 (1)	18 (26)	10 (14)	35 (51)	5 (7)
Direct crowns (69, 99%)	1 (1)	15 (22)	8 (12)	39 (56)	6 (9)
Bridge work					
Bonded (70, 100%)	6 (8)	14 (20)	13 (19)	32 (46)	5 (7)
Core and post (70, 100%)	3 (4)	14 (20)	15 (21)	33 (47)	5 (7)
Lab composite facing (70, 100%)	1 (1)	8 (11)	7 (10)	49 (70)	5 (7)
Bonded bridges (acid etch bridge) (70, 100%)	7 (10)	21 (30)	8 (11)	29 (41)	5 (7)
Implants					

The name of the procedure (No./% of people who answered the question)	Routinely (%)	Occasionally (%)	Seldom (%)	Never (%)	Refer to a specialist clinic (%)
Implants (68, 97%)	3 (4)	2 (3)	1 (1)	27 (40)	35 (51)
Extractions					
Simple one extraction (69, 99%)	65 (94)	3 (4)	0 (0)	1 (1)	0 (0)
Multiple extraction (70, 100%)	60 (86)	7 (10)	1(1)	1 (1)	1 (1)

Table 4: Conscious sedation work place policies' data.

Total (%)	Variable	Number (%)
Are you aware if your department/practice that you are working has a sedation policy for anxious patients? 66 (100%)	Yes	41 (62)
	No	25 (38)
Aware of contractual (commission) constrictions **on provision of CS?** 56 (100%)	Yes	48 (86)
	No	8 (14)

Appendix 1. A copy of the questionnaire.

KCL Ethics Ref: LRS-14/15-1252

Questionnaire batch 1

Date:

Title of study:

Survey of treatment policies at centres dealing with highly dentally anxious patients across the United Kingdom.

We are currently doing a pilot study to see if your service is offering conscious sedation (oral, inhalation, intravenous sedation) for dental treatment for people with high dental anxiety. We are also interested to know the level of restorative dental care you are offering anxious patients.

Please complete one questionnaire for each centre (i.e. if you work for more than one service, operating under different Trusts, please complete one for each) and send the completed questionnaire to Ellie Heidari in the envelope provided.

Please circle one!

1. Are you?

   Male

   Female

2. Are you on the GDC specialist list?

Yes If yes, please specify _____

No

3. How old are you?

20-29

30-39

40-49

50-59

60 +

4. When did you qualify with your first dental degree e.g. BDS?

Before 1980

1980-1984

1985-1989

1990-1994

1995-1999

2000-2004

2005-2009

5. What is your main current job title?

GDP

Dental officer

Senior dental officer

Armed forces

Hospital: Consultant Specialty dentist

Academic: Lecturer Senior lecturer

Postgraduate student

6. In which department do you see your patients?

In hospital: Sedation Restorative Oral surgery Special care

Sedation and Special Care Dentistry
Other:_____

In community: In the department of special care dentistry Other: _____

7. Are you aware if your department/practice that you are currently working (see question 6) has a sedation treatment policy for dentally anxious patients?

Yes If yes, are you able to send us a copy with this questionnaire?

Yes No, (please specify)_____

No (If no, please go to question 8).

8. Are you aware of any contractual (commissioning) constriction on provision of conscious services for people with dental anxiety? If so please mention them.

9. In your treatment planning of an anxious patient undergoing sedation what treatment options would you consider (see boxes below).

Please just tick (√) one of answered in each of the statements below when appropriate.

9.1 Periodontal

Number	**The name of the procedure**	**Routinely**	**Occasionally**	**Seldom**	**Never**	**Refer to a specialist clinic**
9.1.1	Simple scaling					
9.1.2	2 visit periodontal treatment					

9.1.3	Chronic periodontal treatment (multiple teeth and visits)					
9.1.4	Gingivectomy					
9.1.5	Crown lengthening					

Refer because of _____

9.2 Fillings

Number	**The name of the procedure**	**Routinely**	**Occasionally**	**Seldom**	**Never**	**Refer to a specialist clinic**
9.2.1	Amalgam					
9.2.2	Tooth coloured filling					
9.2.3	Fissure sealant (PPR)					

9.3 Root fillings

Number	**The name of the procedure**	**Routinely**	**Occasionally**	**Seldom**	**Never**	**Refer to a specialist clinic**
9.3.1	Incisor/ canine					
9.3.2	Upper/lower premolar					
9.3.3	Molar					
9.3.4	Apicectomy					

Refer because of _____

9.4. Crowns

Number	The name of the procedure	Routinely	Occasionally	Seldom	Never	Refer to a specialist clinic
9.4.1	Porcelain					
9.4.2	Inlay					
9.4.3	Gold inlay					
9.4.4	Indirect gold crowns					
9.4.5	Direct crowns					
9.4.6	Other					

Refer because of _____

9.5 Bridge work

Number	The name of the procedure	Routinely	Occasionally	Seldom	Never	Refer to a specialist clinic
9.5.1	Bonded					
9.5.2	Core and post					
9.5.3	Lab composite facing					
9.5.4	Bonded bridges (acid etch bridge)					

Refer because of _____

9.6 Implants

Number	The name of the procedure	Routinely	Occasionally	Seldom	Never	Refer to a specialist clinic
9.6.1.	Implants (if yes, please go to 1.2 and 1.3)					

Refer because of

9.6.2	What type of patients would you provide implant for? Please circle as many as Applicable.	**Gagging**	**Special care patients**	**Medically compromised**	**Phobic patients**	**Other, please specify**
9.6.3	Please circle as many as applicable. **Where would the site be?** Mandibular Maxilla	**The maximum and minimum extension of the bridge?** Maximum Minimum		**The type of material?** _____	**How many units?** _____	**Other, please specify?** _____

Refer because of _____

9.7. Extractions

Number	The name of the procedure	Routinely	Occasionally	Seldom	Never	Refer to a specialist clinic
9.7.1	Simple one extraction					
9.7.2	Multiple extraction					

10. Please list the reason(s) as to why you would refer to a specialist clinic.

11. Are you aware of any other services that provide sedation for dentally anxious patients in your area?

    Yes, if yes, please go to question 10.

    No.

12. Please provide a list of services/practitioners in your area that are providing sedation for this patient group.

Any other comments:

Thank you very much for your assisstance.

I look forward to hearing from you.

Kind regards,

Ellie Heidari

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